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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/609,236	06/26/2003	Venkat Selvamanickam	SPP 18.809	7733

26304 7590 10/28/2005

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EXAMINER

KACKAR, RAM N

ART UNIT	PAPER NUMBER
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1763

DATE MAILED: 10/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/609,236

Applicant(s)

SELVAMANICKAM ET AL.

Examiner

Ram N. Kackar

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 August 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5, 7-11 and 25-31 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5, 7-11 and 25-31 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>8/17/2005</u> <i>pu</i> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. **Claims 1-4, 7-11 and 25-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lijima et al (2001/0006042) in view of Vaidya et al (US 5076203).**

Lijima et al disclose a process for cooling and positioning a translating substrate (tape like) which could be comprise metal like nickel (Paragraph 59) in a deposition chamber for vacuum deposition (abstract and Fig 3), gas inlet (38), source of deposition material (36), means of delivering the deposition material (ion beam -38), means of translating a substrate (24,25), means of positioning the substrate so that deposition material impinges on the substrate (23) whereas the substrate positioning means contains internal gaseous coolant delivery channels through nozzles (Fig 5-60) which could comprise nitrogen or oxygen as a part of air (paragraph 65 and 86). Lijma et al further teach that the process is used for making a buffer layer of yttrium stabilized zirconia (YSZ) or MgO for a superconducting film (Abstract and paragraph 71) using ion assist (39).

Further Lijma et al teach that FWHM (full width at half maximum) is the measure of biaxial texture (*indicator of crystal orientation- Paragraph 99*) and that it could be

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minimum at an incidence angle of 50-60 degrees (paragraph 16,87 and 99). Further Lijma et al disclose various parameters affecting FWHM and disclose it to be below 10 degrees (Fig 13).

Lijma et al teach that substrate positioning means contains internal gaseous coolant delivery channels but fail to disclose additional liquid coolant channels and specific size of gas orifices.

Vaidya et disclose a process for cooling and positioning a translating substrate in a deposition chamber for vacuum deposition (Col 1 lines 8-11), gas inlet (Fig 1-17, Fig 6-30), source of deposition material (Fig 6-27), means of delivering the deposition material (electron -beam heater (Col 3 line 35), means of translating a substrate (Fig 6-22) from 0-90 meters per min (Abstract), curved means of positioning the substrate so that deposition material impinges on the substrate (23) whereas the substrate positioning means contains internal liquid coolant channels (23a and 23b) and internal gaseous coolant delivery channels (Fig 6-30, Fig 7-10 and Col 6 lines 5-68) which could use oxygen or argon to allow the temperature from 0 degrees C upwards.

As discussed above Vaidya et al disclose the substrate positioning means contains internal liquid coolant channels (23a and 23b) and internal gaseous coolant delivery channels in three different ways. First being from the side through injecting through holes (as in Fig 6-30 and Fig 2-16a) and the other two being from behind the support either through porous fixed support (Fig 7-10 and Col 6 lines 5-20) or through an enclosed cavity (Fig 7-10 and Col 6 lines 44-68).

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Furthermore Vaidya et al teach that these features could be combined (Col 6 lines 44-68) and teach that the injection holes could be 1.5 mm diameter at 15 mm pitch (Col 4 lines 3-9).

Therefore having liquid coolant channels would have been obvious for one of ordinary skill in the art at the time of invention since liquid coolant channels help to remove the heat from the positioning means.

Since the hole diameter and spacing determine the amount of gas and its distribution behind the substrate which affects amount and uniformity of cooling it would have been obvious for one of ordinary skill in the art at the time of invention to replace the porous outlets in the support by spaced holes to distribute sufficient gas behind the tape substrate for optimum heat transfer and reduced friction.

3. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lijima et al (2001/0006042) in view of Vaidya et al (US 5076203) as applied to claims 1-4, 7-11 and 25-31 and further in view of Cavalca et al (20010033960).

Lijima et al in view of Vaidya et al is discussed above.

Lijima et al in view of Vaidya et al disclose a deposition chamber for vacuum deposition and means of delivering the deposition material as (electron-beam heater Col 3 line 35) but fail to disclose other means of delivery conventionally used for physical vapor deposition on tape substrates like magnetron sputtering.

Cavalca et al disclose vacuum deposition methods and teach that physical vapor deposition, ion beam sputtering and magnetron sputtering are for good control of

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uniformity, thickness and contamination free deposition of large surfaces in a reel to reel web type of substrates where coating on large surfaces is required (Paragraph 156).

Therefore it would have been obvious for one of ordinary skill in the art at the time of invention to use magnetron sputtering as an alternative means of delivery since this technique is typical and conventional for coating on large surfaces with advantage.

Response to Arguments

Applicant's arguments filed 8/17/2005 have been fully considered but they are not persuasive.

The arguments relate to the deficiency of Vaidya et al in disclosing the new limitation of an IBAD apparatus added in the last amendment. These arguments are now moot in view of new grounds of rejection presented in this office action.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

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extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ram N. Kackar whose telephone number is 571 272 1436. The examiner can normally be reached on M-F 8:00 A.M to 5:P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on 571 272 1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Ram Kackar
Examiner AU 1763